Cut & Shuffle

Write a program that accepts the order of cards in a deck, then cut and shuffle the deck as instructed.

Cutting the deck of cards is defined as separating the deck into two equal piles, then putting the back pile in front of the front pile. For example:

Cutting A 2 3 4 5 6 7 8 9 10 J Q returns 7 8 9 10 J Q A 2 3 4 5 6.

Shuffling the deck of cards is defined as separating the deck into two equal piles, then alternating cards between the two piles starting from the left pile until both piles are out of cards. For example:

Shuffling A 2 3 4 5 6 7 8 9 10 J Q returns A 7 2 8 3 9 4 10 5 J 6 Q.

Note: Assume all inputted decks have even number of cards.

Input

The first line is a string of card names in a deck, top to bottom (doesn't have to include all 52 cards), each card separated by a blank space. The number of cards is always even.

The second line is the order of Cut or Shuffle operations to be done to the deck. The letter C represents Cutting, and the letter S represents Shuffling. For everything else, do nothing.

Output

All card names from top to bottom, after performing all the given Cuts and Shuffles.

Example

Input (from keyboard)	Description	Output (on screen)
A J Q 10 C	Cut	Q 10 A J
A J Q 10 CS	Cut -> Shuffle	Q A 10 J
A J Q 10 CSC	Cut -> Shuffle -> Cut	10 J Q A
A J Q 10 C S C SX	Cut -> Shuffle -> Cut -> Shuffle (Ignore X)	10 Q J A